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HESPERIA LINDSEYI MCCORKLEI (HESPERIIDAE): A NEW SUBSPECIES OF SKIPPER FROM SOUTHWESTERN OREGON, USA.

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ABSTRACT. A new subspecies of *Hesperia lindseyi* Holland is described from southwestern Oregon, United States. This subspecies, *Hesperia lindseyi mccorklei*, is the northernmost known taxon of the *Hesperia lindseyi* group, which is mostly distributed throughout Californian savanna and chaparral plant communities. *H. l. mccorklei* presently appears to be isolated to the Jackson Creek and South Umpqua River drainages in Douglas County, Oregon.

Additional key words: skippers, oak savanna, chaparral

Hesperia lindseyi (Holland, 1930) Hesperiidae is a taxon that occupies various grasslands, chaparral, and savanna habitats of California, with outlying populations in southern Oregon and northwestern Nevada (MacNeill 1964, Dornfeld 1980, Hinchliff 1994, Pyle 2002). Recently, Emmel *et al.* (1998) designated three new subspecies of *Hesperia lindseyi* based on geographically distinct phenotypes that were originally delimited by MacNeill (1964). *Hesperia lindseyi macneilli* Emmel, Emmel and Mattoon, 1998 occurs from coastal southern Marin Co., California north to southern Humbolt County and was considered the darkest of the *H. lindseyi* subspecies. *H. l. eldorado* Emmel, Emmel, and Mattoon, 1998 inhabits the western foothills of the Sierra Nevada from its most southern distribution in El Dorado Co., California north to Butte County. The third subspecific taxon described, *H. l. septentrionalis* Emmel, Emmel and Mattoon, 1998 occupies the northernmost latitudes of the three *H. lindseyi* subspecies. It occurs from low to middle elevations in the Siskiyou Mountains in northern California and southwestern Oregon, and extends eastward across the Klamath Basin of south-central Oregon into northwestern Nevada. The immature stages of *Hesperia lindseyi* consume grasses, primarily *Festuca idahoensis* and *Danthonia californica* Boland Poaceae (MacNeill 1964, 1975). These grasses are generally shade intolerant and are commonly encountered in drier, mesic grasslands, scrub, savanna and chaparral plant communities (Hitchcock 1970).

In Oregon, *Hesperia lindseyi septentrionalis*, is confined to the southern portion of the state. It is commonly taken by collectors in oak (*Quercus kellogii* Newb. and *Q. garryana* Dougl. ex Hook. Fagaceae) savanna remnants near the Oregon/California border, in and near the town of Klamath Falls, and occasionally in the Warner Mountains of Lake County (Warren 2005). On 6 June 1996 the northernmost known population of *H. lindseyi* was discovered by Donald G. Severns in southern Douglas County, Oregon, approximately 12 km east of the town of Tiller along Jackson Creek in the South Umpqua River drainage. This population of *H. lindseyi* is approximately 70 km north of the nearest known populations of *H. lindseyi septentrionalis*, is phenotypically distinct, and exists in an isolated remnant of oak savanna surrounded by Douglas fir (*Pseudotsuga menziesii* Mirbel Franco Pinaceae) forests. In the following pages we describe a new subspecies of *Hesperia lindseyi*, comment on its life history, and discuss the geographic bounds for the new taxon.

Hesperia lindseyi mccorklei Severns and Severns, new subspecies

Description. Male. Mean forewing width 11.8 mm, ranging from 10.5 to 13.0 mm (n= 38). Dorsal surface (Fig. 1): Forewing bright orange and slightly irideseent; outer black margin extends into inner two thirds of forewing, often surrounding and defining the apical and subterminal spots; post-stigmal patch appears larger and darker when compared to all other *Hesperia lindseyi*. Fringe is brownish-buff with the vein terminals marked by the presence of black scales. Hindwing ground color same as forewing; black hindwing margins extend to distal end of the macular arm band. Lighter orange areas correspond with macular band spotting, which tends to contrast with the ground color. Fringe unbroken throughout the hindwing margin, ranging from cream to buff.

Ventral surface (Fig. 1): Pale orange-brown ground color becoming inwardly buff, abruptly transitioning to black near thorax; apical and subterminal spots surrounded by a field of golden-green scales with intermittent melanic scales covering approximately one third of distal forewing. Apical and subterminal spots cream with a slight greenish tinge, area below stigma is black. A black terminal line runs the length of the forewing separating the fringe from the rest of the wing; vein terminals are marked with enlarged areas of black scales extending from terminal line to fringe edge. Hindwing ground color same as area surrounding the ventral forewing apical and

FIG. 1. A). *H. l. mccorklei*, female holotype, dorsal/ventral. Data in text. B). *H. l. mccorklei*, male allotype, dorsal/ventral. Data in text. C). *H. l. septentrionalis*, female, dorsal/ventral "East of O.T.I., Klamath Falls, Klamath Co. OR, 21 June 1996" D. Severns leg. D). *H. l. septentrionalis*, male, dorsal/ventral, capture data same as female. E). *H. l. macneillii*, female, dorsal/ventral "Etsel Ridge el. 4,600 ft. 5 mi. S. Eel River R.S., Mendocino Co. CA, 13-June-1972, J. Shepard" F). *H. l. macneillii*, male, dorsal/ventral, same capture data as female.

subapical spots; macular band cream with a slightly green tinge. Generally, slightly darker greenish cream scales extend along veins that contact the macular band (but light venation may be absent in some individuals). Vanal area orange-buff, occasionally with a greenish tinge and melanic scales near basal areas. Fringe cream and unbroken throughout hindwing.

Female. Mean female forewing width 14.6 mm ranging from 13 to 16 mm (n= 22). Dorsal surface (Fig. 1): Forewing ground color dark brown on margins becoming lighter inwardly, grading to tawny near thorax. Subapical spots conspicuously defined by ventral surface ground color, spots generally cream with a light orange hue. Apical spots joined by pale orange areas, approximately equal in size to apical spots, running down the forewing, bounded inwardly by lighter areas resulting in a banded appearance. Forewing fringe light gray, and broken by black scales at vein terminals. Hindwing ground color generally uniform, ranging from dark brown to tawny. Macular spots warm orange-brown and defined by comparably darker ground color. Hindwing fringe light gray, unbroken, extending along entire hindwing.

Ventral surface (Fig. 1): Central forewing occupied by coal-gray scales beginning near thorax, extending to center of forewing. Above central forewing melanic region, ground color is orange, below melanic region ground color is buff. Apical and subterminal spots cream, surrounded by golden, olive green scales with considerable melanic overscaling, overall appearing golden, forest-green. Fringe light gray; vein terminals black, extending through hindwing terminal line that runs along the entire forewing. Ventral hindwing ground color golden, olive green with frequent melanic scales, overall appearing golden, forest-green. Veins, same as ventral hindwing ground color. Macular band appears nearly white and weakly silvered, sharply contrasting with ventral hindwing ground color. Vanal area orange-buff, with occasional melanic scales inwardly. Fringe light gray, remaining unbroken for length of hindwing.

Types. Holotype: ♀ Oregon, Douglas County, Hillside north of Jackson Creek Road, 3.8 miles east of the junction with South Umpqua Road (UTMs: N 4755771 m, E 10 514710 m, 1470 ft elevation), 19 June 2004, leg Paul M. Severns; bearing white printed label with the above information and printed red label reading "*Hesperia lindseyi mccorklei* ♀, P.M. Severns and D.G. Severns 2005". **Allotype**: ♂, same locality as holotype, 19 June 2004, leg Paul M. Severns, bearing white printed label and red printed label like holotype. **Paratypes**: 134 ♂ and 36 ♀ all collected from the same

locality as the holotype. D.G. Severns: 2 ♂ and 1 ♀ on 4 July 1999, 2 ♂ 9 July 1999, 4 ♂ and 3 ♀ on 24 June 2000, 2 ♂ 14 July 2003, 4 ♀ 19 June 2004. Paul M. Severns: 9 ♀ and 5 ♂ on 19 June 2004. Andrew D. Warren: 20 ♂ 14 July 2003, 50 ♂ and 1 ♀ on 17 July 2003, 30 ♂ and 23 ♀ on 27 July 2003.

The holotype and allotype and six male paratypes will be deposited at the McGuire Center for Lepidoptera Research (MCLR), Sarasota, Florida. One female and five male paratypes will be deposited at each of the following institutions: Oregon State Arthropod Collection (OSAC), Corvallis, California Academy of Sciences, San Francisco, and the American Museum of Natural History, New York. One hundred male paratypes and 32 female paratypes are housed in the private collection of Andrew D. Warren, nine male and four female paratypes are held in the private collection of Donald G. Severns, and five female and five male paratypes are in the private collection of Paul M. Severns.

Etymology. We name this species in honor of David V. McCorkle, for his lifetime contribution to our understanding of Pacific Northwest Lepidoptera, his encouragement to amateur lepidopterists, and the many years of organizing the Northwest Lepidopterists' Society annual meetings.

Diagnosis. *Hesperia lindseyi mccorklei* can be readily distinguished from its nearest geographic conspecific taxon, *H. l. septentrionalis*, by an overall darker appearance on both the dorsal and ventral surface of males and females (Fig. 1). Some of the darkest males and females of *H. l. septentrionalis* may morphologically resemble the lightest individuals of *H. l. mccorklei*, but of all the described subspecies of *H. lindseyi*, *H. l. meeorklei* is the darkest (Fig. 1). Furthermore, essentially all females of *H. l. meeorklei* lack white or cream colored scales extending from the macular spots along the veins on the ventral hindwing that gives *H. l. septentrionalis* its "shaggy" appearance (Fig. 1), a diagnostic wing character for the subspecies (Emmel *et al.* 1998). The lack of light colored scales on the female ventral hindwings separates all other subspecific taxa of *H. lindseyi* from *H. l. meeorklei*.

DISCUSSION

H. l. mceorklei is apparently restricted to the Jackson Creek drainage and associated habitat along the South Umpqua River of Douglas County, Oregon. A single female (OSAC) and two males (MCLR) resembling *H. l. meeorklei* were collected by J. Hinchliff on 20 June 1976, bearing the locality of "Jumpoff Joe Creek, Josephine Co., OR". Unfortunately, this population of *H. lindseyi* has not been relocated, perhaps due to the vague locality on the specimen label. Jumpoff Joe Creek runs from the western foothills of the Cascades to the northern edge of the Siskiyou Mountains and roads line the creek along its course. Given the ambiguity of the Jumpoff Joe Creek locality, *H. l. meeorklei* may extend to the northern edge of the Siskiyou Mountains where it would likely blend with *H. l. septentrionalis*, or skirt along the western edge of the southern Cascades where it may also contact *H. l. septentrionalis*. However, three male *H. lindseyi* (MCLR) collected by S. Jewett on 5 July 1975 near Rough and Ready Creek, Josephine Co., OR (on the north side of the Siskiyou Mountains) appear to be of the phenotype ascribed to *H. l. septentrionalis* (A. Warren personal communication 2004). The phenotype of the Rough and Ready Creek individuals suggest that *H. l. meeorklei* is more likely to occupy the western edge of the southern Cascades foothills, but more exploration is needed to delimit the taxon's distribution.

At the type locality, *H. l. mceorklei* inhabits oak savanna with young *Pinus pondersa* and *Pseudotsuga menziesii* trees encroaching into the open areas between the scattered oaks. The habitat at the type locality extends at least 3 km upstream on Jackson Creek and also runs approximately 2 km along a low-lying ridge to the north. *H. l. mccorklei* flies from mid June through mid July amongst the small open grassy areas between and beneath large oak trees and pines. Both males and females commonly nectar on the preferred *Prunella vulgaris L. Lamiaceae* and *Brodiaea elegans* Hoover Liliaceae, but they also perch on and occasionally probe the flowers of *Leucanthemum vulgare* Lam. Asteraceae for nectar. When temperatures exceed 23-25° C, females often perch beneath the shade of trees on nectar plants as well as on the inflorescences of numerous grass species. Males patrol open patches of grass in the direct sun, presumably searching for newly eclosed females. We did not directly observe any oviposition events, but one of the known host plants for *Hesperia lindseyi*, *Danthonia ealifornica* Boland. Poaceae, is common in the meadows where *H. l. meeorklei* flies. *Danthonia californiea* also appears to be in relative proportions to the adult butterfly population, while the other *Festuca* spp. are uncommon and have low relative abundance.

Aside from the suitable habitat around the type locality, potential sites for other populations of *H. l. mecorklei* are scattered 5-10 km up- and downstream of the confluence with Jackson Creek on the South Umpqua River. The oak chaparral habitat is uncommon along the South Umpqua River and is isolated from other suitable savanna habitat to the south and north by 40-50 km wide swaths of dense, Douglas fir forests. Some of these fir forests were historically oak chaparral, but were planted within the last 100 years with Douglas fir trees for logging. Presently, logging practices threaten *H. l. meeorklei* at its type locality as a large portion of the habitat, approximately 40 ha, was bladed of all vegetation and replanted with Douglas fir within the last three years. About a third of the remaining

habitat at the type locality appeared to be flagged for future tree harvest and planted Douglas fir seedlings, as well as natural volunteers, threaten to close the open gaps that support *H. l. mccorklei* larval and nectar plants.

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